CHAPTER 120
LANDFARMING OF PETROLEUM CONTAMINATED SOIL

[Prior to 12/3/86, Water, Air and Waste Management[900]]

567—120.1(455B) Purpose. The purpose of this chapter is to establish rules for the safe and effective remediation and disposal of petroleum contaminated soil (PCS) through landfarming. These rules are intended to satisfy the requirements of Iowa Code sections 455B.301A, 455B.304 and 455B.383.

567—120.2(455B) Applicability and compliance.

120.2(1) These rules apply to the landfarming of soils contaminated with biodegradable petroleum products including, but not limited to, gasoline, diesel fuel, kerosene, jet fuel, motor oil, hydraulic fluid, or some combination thereof. All PCS landfarming activities in which 3 or more cubic yards of PCS are excavated shall comply with this chapter. Uncontaminated soil that is excavated during the removal of the PCS shall not be counted toward the 3-cubic-yard applicability threshold.

120.2(2) These rules do not apply to PCS that is being remediated or disposed of at a sanitary landfill. For rules governing the remediation and disposal of PCS at a sanitary landfill, see 567—Chapter 109.

120.2(3) The issuance of a landfarm permit by the department in no way relieves the generator or permit holder of the responsibility of complying with all other local, state, or federal statutes, ordinances, and rules and other applicable requirements.

567—120.3(455B) Definitions. In addition to the definitions set out in Iowa Code section 455B.301, which shall be considered to be incorporated by reference in these rules, the following definitions shall apply:

"High water table" means the position of the water table that occurs in the spring in years of normal or above-normal precipitation.

"Incorporation" means to mix into the soil by tilling, disking, or other suitable means, thereby creating a loose and divided soil texture.

"Landfarm" means a surface-level soil remediation technology for petroleum contaminated soils that reduces concentrations of petroleum constituents through biodegradation to a level safe for human health and the environment. This technology usually involves spreading excavated contaminated soils in a thin layer on the ground surface and stimulating aerobic microbial activity within the soils through aeration. The enhanced microbial activity results in degradation of adsorbed petroleum product constituents through microbial respiration. Some petroleum product constituents volatize during the landfarming process. There are two types of landfarm permits issued by the department: a multiuse landfarm permit and a single-use landfarm applicator permit.

"Landfarm plot" means the specific operating area of a landfarm upon which a particular source and type of PCS is applied. A landfarm plot is a subset of the operating area.

"Landfarm season" means the time period beginning April 1 and ending October 31 of each year.

"Multiuse landfarm" means a landfarm used for more than one application of PCS. Each application of a particular source and type of PCS is landfarmed in separate landfarm plots. After the PCS is remediated, the landfarming process may be repeated. A multiuse landfarm is not located at a sanitary landfill.

"Nonstandard PCS" means soil contaminated with a petroleum product other than gasoline, diesel fuel, kerosene, jet fuel, motor oil, hydraulic fluid, or some combination thereof.

"Operating area" means the total aggregate area of the landfarm where PCS is applied. The operating area of a multiuse landfarm may include multiple landfarm plots.

"Petroleum contaminated soil" or *"PCS"* means soil contaminated with petroleum products including, but not limited to, gasoline, diesel fuel, kerosene, jet fuel, motor oil, hydraulic fluid, or some combination thereof.

"Single-use landfarm" means the area of land used to landfarm a single application of a particular source and type of PCS. Single-use landfarms are created when a single-use landfarm applicator, or the landfarm's supervised agent, land applies PCS. No other PCS may be applied within 15 feet of the area of land used as a single-use landfarm until the single-use landfarm is closed pursuant to rule 567—120.12(455B).

"Single-use landfarm applicator" means an entity permitted by the department to land apply PCS to create one or more single-use landfarms.

"Source of PCS" means the contaminated area from which the PCS originated. Examples of a source include, but are not limited to, a specific gas station or spill location.

"Standard PCS" means soil contaminated with gasoline, diesel fuel, kerosene, jet fuel, motor oil, hydraulic fluid, or some combination thereof.

"Tar ball" means a ball or conglomeration of tarlike petroleum constituents. Tar balls may form when PCS that contains a high concentration of long-chain or high molecular weight hydrocarbons is landfarmed.

"Type of PCS" means the specific petroleum product or combination thereof that contaminated the soil. Examples of type include, but are not limited to, gasoline, diesel fuel, kerosene, jet fuel, motor oil, hydraulic fluid, or some combination thereof.

"Water table" means the water surface below the ground at which the unsaturated zone ends and the saturated zone begins.

567—120.4(455B) Landfarming permits.

120.4(1) *Permit required.* PCS shall not be landfarmed without a permit from the department.

120.4(2) *Types of landfarm permits.* The department issues two types of landfarm permits as follows:

a. Multiuse landfarm permit. A multiuse landfarm permit is issued for a landfarm designed to be used for more than one application of PCS. This permit requires that each application of a particular source and type of PCS be landfarmed in separate landfarm plots. If a facility has a multiuse landfarm permit, then the landfarming process may be repeated after the PCS has been remediated. A multiuse landfarm permit is not for a facility located at a sanitary landfill.

b. Single-use landfarm applicator permit. A single-use landfarm applicator permit is issued to an entity that is then permitted by the department to land apply PCS to create one or more single-use landfarms. This permit requires that single-use landfarms be used for only one application of a particular source and type of PCS. This permit requires that no other PCS be applied within 15 feet of the area of land used as a single-use landfarm until the single-use landfarm is closed pursuant to rule 567—120.12(455B).

120.4(3) *Construction and operation.* All landfarms shall be constructed and operated according to these rules, any plans and specifications approved by the department, and the conditions of the permit. Any approved plans and specifications shall constitute a condition of the permit.

120.4(4) *Transfer of title and permit.* If title to a type of landfarm permit is transferred to a third party, then the department shall transfer the permit within 60 days if the department has determined that the following requirements have been met:

a. The title transferee has applied in writing to the department within 30 days of the transfer of title to request a transfer of the permit.

b. The permitted facility and title transferee are in compliance with Iowa Code chapter 455B, this chapter and the conditions of the permit.

120.4(5) *Permit conditions.* A permit may be issued with conditions, specified in writing by the department, that are necessary to ensure the landfarm can be constructed and operated in a safe and effective manner, and in compliance with Iowa Code chapter 455B and this chapter.

120.4(6) *Effect of revocation.* If a landfarm permit held by any public or private agency is revoked by the department, then no new landfarm permit shall be issued to that agency for a period of one year from the date of revocation. Such revocation shall not prohibit the issuance of a permit for the same landfarm project to another public or private agency.

120.4(7) *Inspection of site and operation.* The department may inspect the facility and its operations to determine if the landfarm is in compliance with this chapter and the permit requirements.

120.4(8) *Duration of permits.* Landfarm permits shall be issued and may be renewed for a three-year term.

120.4(9) *Request for permit renewal.* A request for permit renewal shall be in writing and filed at least 90 days before the expiration of the current permit. If the renewal applicant is found not to be in compliance with this chapter or the permit requirements, then the applicant shall achieve compliance or be placed on a compliance schedule approved by the department before the permit may be renewed.

120.4(10) *Request for permit modification.* Requests for permit modifications must be submitted in writing to the department with supporting documentation and materials.

120.4(11) *Factors in permit issuance decisions.* The department may request that additional information be submitted for review to make a permit issuance decision. The department may review and inspect the facility, its agents and operators, and compliance history. The department may review whether or not a good-faith effort to maintain compliance and protect human health and the environment is being made, and whether a compliance schedule is being followed. The department may issue a permit on a trial basis.

567—120.5(455B) Landfarm permit application requirements.

120.5(1) *Multiuse landfarm permits.* To apply for a multiuse landfarm permit, the applicant shall submit the following information to the department:

a. The name, address, and telephone number of:

(1) Agency applying for the multiuse landfarm permit.

(2) Owner(s) of the agency.

(3) Owner(s) of the multiuse landfarm site.

(4) Individual responsible for the operation of the multiuse landfarm.

(5) Individual responsible for record keeping and reporting.

(6) An emergency contact person.

b. A site analysis demonstrating that the proposed site complies with the requirements of rule 567—120.7(455B).

c. A site plan that includes a legal description of the site, that designates and labels landfarm plots upon which PCS will be applied and groundwater monitoring wells, and that complies with the requirements of rule 567—120.8(455B).

d. A groundwater monitoring plan pursuant to paragraph 120.8(2)*"c."*

e. A plan of operations that complies with the requirements of rules 567—120.9(455B) and 567—120.11(455B).

f. An emergency response and remedial action plan (ERRAP) pursuant to rule 567—120.10(455B).

g. Information on how the site will be used for at least three years following the last application of PCS.

h. A signed and dated statement from the owner(s) of the agency which reads: "I guarantee that this agency will comply with 567—Chapter 120."

120.5(2) *Single-use landfarm applicator permits.* To apply for a single-use landfarm applicator permit, the applicant shall submit the following information to the department:

a. The name, address, and telephone number of:

(1) Agency applying for the single-use landfarm applicator permit.

(2) Owner(s) of the agency.

(3) Individual responsible for record keeping and reporting.

(4) An emergency contact person.

b. A plan of operations that complies with the requirements of rules 567—120.9(455B) and 567—120.11(455B).

c. An emergency response and remedial action plan (ERRAP) pursuant to rule 567—120.10(455B).

d. A signed and dated statement from the owner(s) of the agency which reads: "I guarantee that this agency will comply with 567—Chapter 120."

120.5(3) *Incomplete applications.* If the department finds the permit application information to be incomplete, the department shall notify the applicant in writing of that fact and of the specific deficiencies. If the deficiencies are not corrected within 30 days, the department shall return the application materials to the applicant. The applicant may reapply without prejudice.

567—120.6(455B) PCS analysis and characterization.

120.6(1) *Department-supervised emergency cleanups.* PCS originating from the cleanup of a spill or expedited overexcavation at a tank closure or upgrade under department jurisdiction shall be characterized and tested as follows before being landfarmed. Such PCS may be landfarmed prior to chemical testing, pursuant to the application rate in subrule 120.9(6) and reporting requirements of rule 567—120.11(455B), if permission is obtained from department emergency response personnel or the department field office with jurisdiction over the landfarm site.

a. Source identification. The name and address of the contaminated site from which the PCS originated and the spill or underground storage tank (UST) registration number shall be recorded.

b. Type classification. The PCS shall be classified by type according to the petroleum product's trade name (e.g., gasoline, diesel fuel) or according to the trade names if there is a mixture of petroleum products.

c. Chemical testing. A sample of the PCS shall be obtained from the emergency cleanup site and tested pursuant to paragraph 120.6(2)*"c."*

120.6(2) *Other cleanups.* PCS not originating from a department-supervised emergency cleanup pursuant to subrule 120.6(1) shall be characterized and tested as follows before being landfarmed. PCS originating from a cleanup pursuant to 567—Chapter 135 may utilize those test results as applicable.

a. Source identification. The name and address of the contaminated site from which the PCS originated, the UST registration number, and the leaking underground storage tank (LUST) number shall be recorded, if applicable.

b. Type classification. The PCS shall be classified by type according to the petroleum product's trade name (e.g., gasoline, diesel fuel) or according to the trade names if there is a mixture of petroleum products.

c. Chemical testing. The following analyses shall be performed. Samples shall be acquired, stored, handled, tested, and reported in accordance with the required methodology and accepted scientific procedures.

(1) BTEX testing. The PCS shall be tested for benzene, toluene, ethylbenzene, and xylene (BTEX). A laboratory certified for UST petroleum analyses pursuant to 567—Chapter 83 shall test the samples. The analysis shall utilize the most recent version of Method OA-1 (GCMS), "Method for Determination of Volatile Petroleum Hydrocarbons (Gasoline)," University of Iowa Hygienic Laboratory.

(2) TEH-diesel testing. The PCS shall be tested for total extractable hydrocarbons (TEH-diesel). A laboratory certified for UST petroleum analyses pursuant to 567—Chapter 83 shall test the samples. The analysis shall utilize the most recent version of Method OA-2, "Extractable Petroleum Products (and Relatively Low Volatility Organic Compounds)," University of Iowa Hygienic Laboratory.

(3) MTBE testing. The PCS shall be tested for methyl tertiary-butyl ether (MTBE) unless prior analysis at a site, pursuant to rule 567—135.15(455B), has shown that MTBE is not present in soil or groundwater. A laboratory certified for UST petroleum analyses pursuant to 567—Chapter 83 shall test the samples. The analysis shall utilize one of the following methods:

1. The most recent version of Method OA-1 (GCMS), "Method for Determination of Volatile Petroleum Hydrocarbons (Gasoline)," University of Iowa Hygienic Laboratory.
2. U.S. Environmental Protection Agency (EPA) Method 8260B, SW-846, "Test Methods for Evaluating Solid Waste," Third Edition.

(4) Total metals testing. If the history of the petroleum contaminated site is known to have included solvents, batteries, leaded fuel, waste oil, or a gas station in operation prior to 1985, then the PCS shall be tested for total Resource Conservation and Recovery Act (RCRA) metals.

120.6(3) *Tar balls.* PCS that has the potential to produce tar balls shall not be landfarmed at a single-use or multiuse landfarm. Such PCS may be disposed of in a sanitary landfill pursuant to 567—Chapter 109.

120.6(4) *Other tests.* The department may require testing of the PCS for other chemicals of concern.

567—120.7(455B) Site exploration and suitability requirements for landfarms. All landfarms shall meet the following site exploration and suitability requirements.

120.7(1) *Previous use.* If the site is to be used as a single-use landfarm, then the single-use landfarm applicator shall obtain written confirmation from the site owner of one of the following requirements. This subrule shall not apply to land utilized as a landfarm prior to October 20, 2004.

a. That any other landfarm created in the past three years within 15 feet of the proposed operating area has been closed pursuant to rule 567—120.12(455B).

b. That no area within 15 feet of the proposed operating area has been used as a landfarm in the past three years.

120.7(2) *Wells.* PCS shall not be landfarmed or stored within 500 feet of a well that is being used or could be used for human or livestock consumption. Groundwater monitoring wells installed pursuant to paragraph 120.8(2)*"c"* are exempt from this requirement. The department may also exempt from this requirement extraction wells utilized as part of a remediation system. PCS shall not be landfarmed or stored within 500 feet of an agricultural drainage well.

120.7(3) *Sinkholes.* PCS shall not be landfarmed or stored within 500 feet of a sinkhole.

120.7(4) *Groundwater elevations.* Multiuse landfarms shall not landfarm PCS in soil that is within 5 feet of the high water table.

120.7(5) *Surface waters of the state.* PCS shall not be landfarmed or stored within 200 feet of a stream, lake, pond, wetland, or other surface water of the state. The department may waive the setback requirement for surface waters that have been constructed for pollution control purposes.

120.7(6) *Tile lines.* PCS shall not be landfarmed or stored within 200 feet of a tile line surface intake. A multiuse landfarm shall not be located on land that has been tiled. The absence of tile lines shall be verified by written confirmation from the landowner and a visual inspection of the property.

120.7(7) *Housing and sensitive populations.* PCS shall not be landfarmed or stored within 200 feet of an occupied residence, recreational area, child care facility, educational facility, or health care facility.

120.7(8) *Flood plains.* PCS shall not be landfarmed or stored within the 100-year flood plain.

120.7(9) *Slope.* PCS shall not be landfarmed or stored on slopes greater than 5 percent. This requirement may be satisfied by utilizing United States Department of Agriculture (USDA) soil maps.

120.7(10) *Soil properties for operating area.* All soils in the operating area of the landfarm shall comply with the following requirements:

a. USDA textural soil classification.

(1) Multiuse landfarms. Soils in the operating area of multiuse landfarms shall be silty clay, silt clay loam, clay loam, loam, or silt loam as classified by the USDA Textural Classification Chart for soils.

(2) Single-use landfarms. Soils in the operating area of single-use landfarms shall be clay, sandy clay, sandy clay loam, sandy loam, silty clay, silt clay loam, clay loam, loam, or silt loam as classified by the USDA Textural Classification Chart for soils.

b. Stones and debris. Soils in the operating area shall be free of stones and debris larger than 4 inches in diameter.

c. Soil pH. Soils in the operating area shall have a pH greater than or equal to 6 and less than or equal to 9.

d. Bedrock separation. The operating area shall have a minimum of 6 feet of soil over bedrock.

567—120.8(455B) Landfarm design requirements.

120.8(1) *Requirements for all landfarms.* All landfarms shall comply with the following design requirements:

a. PCS storage areas. Storage areas for PCS shall be constructed in compliance with the following requirements:

(1) Over an impervious surface (e.g., tarp, concrete pad, plastic sheeting).

(2) Under a roof or tarp to minimize the infiltration of precipitation.

(3) In an area with minimal potential for stormwater run-on.

b. Flagging. The landfarm plot(s) upon which PCS is land applied shall be flagged pursuant to subrule 120.9(7).

120.8(2) *Additional requirements for multiuse landfarms.* In addition to the requirements of subrule 120.8(1), all multiuse landfarms shall comply with the following design requirements:

a. Signage. Signs shall be posted as follows:

(1) A sign at the primary entrance specifying the name and permit number of the facility, and the telephone number of an emergency contact person.

(2) One "No Trespassing" sign every 200 feet on the site's perimeter but not fewer than one sign per side of the property.

(3) Signs clearly designating and uniquely labeling each separate landfarm plot. The designations and labels for each separate landfarm plot shall not be changed.

b. Access. The department may require that the landfarm be fenced and locked to prevent unauthorized access.

c. Groundwater monitoring.

(1) Monitoring plan. A groundwater monitoring plan shall be maintained which demonstrates that groundwater quality can be accurately monitored at the site. The monitoring plan shall contain the rationale for the position and number of wells, sampling frequency, and testing parameters and procedures. At a minimum, the testing parameters and procedures shall comply with paragraph 120.11(1)*"d."*

(2) Monitoring wells. Groundwater monitoring wells sufficient to monitor the groundwater shall be installed. At a minimum, one up-gradient and two down-gradient monitoring wells shall be installed. The groundwater monitoring wells shall be no farther than 50 feet from the edge of the operating area.

d. Sediment control requirements. Multiuse landfarms shall, at a minimum, implement the applicable sediment control measures listed in this subrule.

(1) Plot separation strips. Separation strips around each landfarm plot shall be planted. Landfarm plot separation strips shall be at least 15 feet wide. The separation strips shall be planted with stiff-stemmed, dense, upright vegetation suitable for growing under native conditions. Mowing of the vegetation shall be minimized. If mowed, the vegetation shall be maintained at a minimum height of 1 foot.

(2) NRCS conservation plan. Multiuse landfarms that have slopes of 3 percent to 5 percent shall implement a Natural Resource Conservation Service (NRCS) designed and approved conservation plan.

e. Stormwater permit. A stormwater permit may be required pursuant to 567—Chapter 64.

567—120.9(455B) Landfarm operating requirements. All multiuse and single-use landfarms shall comply with the following operating requirements:

120.9(1) *Standard PCS.* Only standard PCS may be land applied or stored at a landfarm without a permit amendment from the department. A permit amendment from the department, pursuant to subrule 120.4(10), shall be obtained for each particular source and type of nonstandard PCS before that PCS may be land applied or stored at a landfarm. The permit amendment application shall include a justification of how the PCS can be safely and effectively remediated by landfarming.

120.9(2) *Saturated, slurry, or flammable PCS.* PCS in a saturated, slurry, or flammable condition shall not be land applied or stored at a landfarm. PCS in such a condition shall be bulked with other biodegradable materials (e.g., compost, mulch) until it is no longer saturated, in a slurry, or flammable before it is land applied or stored at a landfarm.

120.9(3) *PCS storage.* PCS that cannot immediately be land applied at the landfarm during landfarm season may be stored at the landfarm as follows. PCS delivered during non-landfarm season may be stored until the conditions of subrule 120.9(4) are satisfied or within the first seven days of landfarm season, whichever is shorter.

a. Seven days or less. PCS may be stored up to seven days in compliance with the following requirements:

(1) Over an impervious surface (e.g., tarp, concrete pad, plastic sheeting).

(2) Under a roof or tarp to minimize the infiltration of precipitation.

(3) In an area with minimal potential for stormwater run-on.

b. Extended storage time. No PCS shall be stored longer than seven days during landfarm season without written permission from the department field office that has jurisdiction over the landfarm.

120.9(4) *PCS application weather and landfarm season.*

a. PCS shall only be land applied during non-landfarm season if the PCS must be land applied as part of an emergency cleanup supervised by the department pursuant to subrule 120.6(1), or all of the following conditions exist:

(1) The operating area is free of snow.

(2) The slope of the operating area is less than 3 percent.

(3) The PCS is incorporated into the soil as soon as site conditions allow.

b. PCS shall not be land applied during precipitation.

120.9(5) *One application, source and type of PCS per plot.* One application of a particular source and type of PCS may be applied to a landfarm plot. A landfarm may only apply a subsequent application of PCS to a previously utilized landfarm plot if such application is in compliance with the following:

a. Multiuse landfarms. A subsequent application of a particular source and type of PCS may be applied to a previously utilized landfarm plot in a multiuse landfarm after the following requirements have been met:

(1) The plot has been tested pursuant to subparagraphs 120.6(2)*"c"*(1), (2), and (3), and the results demonstrate that petroleum constituent concentrations are less than 0.54 mg/kg for benzene, 42 mg/kg for toluene, 15 mg/kg for ethylbenzene, 3800 mg/kg for TEH-diesel, and 0.02 mg/kg for MTBE.

(2) The PCS turning requirement of subrule 120.9(10) has been completed.

b. Single-use landfarms. A subsequent application of a particular source and type of PCS may not be applied within 15 feet of an area used as a single-use landfarm until the single-use landfarm is closed pursuant to subrule 120.12(2).

120.9(6) *PCS application rates.* PCS shall be land applied at a rate that is as uniform as practical over an area sufficient to satisfy the greater of the following area requirements. However, PCS from an emergency cleanup supervised by the department pursuant to subrule 120.6(1) may instead be land applied at a rate of 162 ft^2 of landfarm area per cubic yard (yd^3) of PCS, that is as uniform as practical, and in which no layer of unincorporated PCS is thicker than 2 inches.

a. Petroleum constituents. PCS shall be land applied over the largest area required by the following:

(1) Benzene. PCS contaminated with benzene shall be land applied in accordance with Table 1. The average concentration of benzene in the PCS shall be used to determine the landfarm area (ft^2) required per cubic yard (yd^3) of PCS to be land applied. The average concentration of benzene shall be calculated from all soil boring test results that are within the PCS excavation area. The application shall be as uniform as practical over the area required.

Table 1

Average concentration of benzene (mg/kg)	Ft^2 of landfarm area per yd^3 of PCS applied	Maximum thickness of unincorporated PCS	Yd^3 of PCS per acre of landfarm
0< mg/kg ≤10	81 ft^2	4 inches	537 yd^3
10< mg/kg ≤20	162 ft^2	2 inches	268 yd^3
20< mg/kg	324 ft^2	1 inch	134 yd^3

(2) Toluene, ethylbenzene, xylene, and TEH-diesel. PCS that is not contaminated with benzene or MTBE, but is contaminated with toluene, ethylbenzene, xylene, TEH-diesel, or some combination thereof, shall be land applied at a rate of 81 ft^2 of landfarm area per cubic yard (yd^3) of PCS. The application shall be as uniform as practical, and no layer of unincorporated PCS shall be thicker than 4 inches.

b. Total heavy metals. PCS that has been tested for heavy metals pursuant to subparagraph 120.6(2)*"c"*(4) shall be applied at a rate that is as uniform as practical, that results in no layer of PCS thicker than 4 inches, and that upon incorporation produces a landfarm soil that satisfies the following requirements. This analysis requires prior testing of background levels of heavy metals at the proposed landfarm site.

(1) Total heavy metals are less than 2,500 milligrams per kilogram (mg/kg).

(2) Any particular concentration of a heavy metal is less than the appropriate statewide standard for soil developed pursuant to 567—Chapter 137.

120.9(7) *Flagging.* The landfarm plot(s) upon which PCS is land applied shall be flagged for one year after land application or until the landfarm is closed pursuant to rule 567—120.12(455B), whichever is shorter.

120.9(8) *Removal of solid waste and rubble.* All solid waste that is not PCS (e.g., pipe) shall be removed and properly disposed of. All rubble, stones, and debris larger than 4 inches in diameter, or that interfere with incorporating and turning the PCS, shall be removed and properly disposed of.

120.9(9) *PCS incorporation.* PCS shall be incorporated into the soil by tilling, disking, or other suitable means within 48 hours of being land applied or before the next precipitation event, whichever is sooner. PCS shall not be incorporated deeper than 12 inches.

120.9(10) *Turning the PCS.* After incorporation, the PCS shall be turned by tilling, disking, or other suitable means at least once per month for the first three months during landfarm season.

120.9(11) *No crops for consumption.*

a. Multiuse landfarms shall not grow crops for human or livestock consumption within 15 feet of the operating area until the landfarm is closed pursuant to subrule 120.12(1).

b. Single-use landfarms shall not grow crops within 15 feet of a landfarm plot that is flagged pursuant to subrule 120.9(7). Crops for human and livestock consumption may be grown at a single-use landfarm after the landfarm plot is no longer required to be flagged pursuant to subrule 120.9(7).

120.9(12) *Water quality.* A multiuse landfarm shall not accept additional PCS if evidence of surface water or groundwater contamination exists. Such evidence includes, but is not limited to, a visible sheen on immediately downgradient surface waters or downgradient monitoring well test results greater than two standard deviations of mean analyte concentrations in corresponding upgradient monitoring wells. Responsible parties shall notify the department within 6 hours of discovery of contamination of a water of the state by calling (515)281-8694. The acceptance of PCS shall be suspended until written verification has been received from the department that the site is not or is no longer contaminating surface water or groundwater.

120.9(13) *Removal of PCS from a landfarm.* PCS shall not be removed from a landfarm until the landfarm is closed pursuant to rule 567—120.12(455B) or the following conditions are met:

a. One sample from each 2,500 ft^2 (e.g., 50-foot $\times$ 50-foot area) of landfarm plot is analyzed pursuant to subparagraphs 120.6(2)*"c"*(1), (2), and (3). A minimum of one sample per landfarm plot shall be obtained. All samples shall be obtained from between the top 2 to 6 inches of soil.

b. The results of the tests in paragraph 120.12(1)*"a"* demonstrate that petroleum constituent concentrations for benzene, toluene, ethylbenzene, TEH-diesel, and MTBE are below the detection limits required by 567—Chapter 135.

c. Records of the lab results, amount of PCS removed, and the exact final location of the PCS shall be maintained by the landfarm.

567—120.10(455B) Emergency response and remedial action plans.

120.10(1) *Access.* Emergency response and remedial action plan (ERRAP) documents shall be readily available. Multiuse landfarms shall maintain a copy of the ERRAP on site (e.g., the back of permit sign, fence post, or mailbox). Single-use landfarm applicators shall have employees carry a copy of the ERRAP document to each site where operations are taking place.

120.10(2) *Updates.* An updated ERRAP shall be included with any request for permit modification to incorporate a facility or operational change that requires modification of the currently approved ERRAP.

120.10(3) *Employee training.* At a minimum, all employees shall receive annual training sufficient to understand and utilize ERRAP documents.

120.10(4) *Content.* The content of ERRAP documents shall be concise and readily usable as a reference manual by facility managers and operators during emergency conditions. The ERRAP document content shall address at least the following primary issues in detail, unless project conditions render the specific issue as not applicable. The rationale for exclusion of any issue areas that are not applicable must be provided either in the body of the plan or as a supplement. Additional ERRAP requirements unique to the facility shall be addressed as applicable.

a. Facility information.
(1) Permitted agency.
(2) DNR permit number.
(3) Responsible official and contact information.
(4) Project location.
(5) Facility description.
(6) Site and environs map.

b. Weather-related events.
(1) Intense rainstorms and erosion.
(2) Intense rainstorms or flooding impacting site access and usability.

c. Fire and explosions.
(1) Flammable PCS.
(2) Buildings on site.
(3) Equipment.
(4) Waste gases from PCS.
(5) Off-site fires or explosions at cleanup site or during transport.

d. Spills and releases.
(1) Saturated or slurry PCS.
(2) Free liquids from stored PCS.
(3) Spill of PCS during transport.

e. Hazardous materials.
(1) Hazardous waste delivery.
(2) Hazardous gases.

f. Emergency, spill and release notification and reporting.
(1) Emergency response agencies.
(2) Federal agencies.
(3) State agencies.
(4) County and city agencies.
(5) Special populations near site.
(6) Reporting requirements and forms.
(7) News media.

g. Primary emergency equipment inventory.
(1) Major equipment.
(2) Fire hydrants and water sources.
(3) Off-site equipment resources.

h. ERRAP training requirements.
(1) Training providers.
(2) Employee orientation.
(3) Annual training updates.
(4) Training completion and record keeping.

567—120.11(455B) Reporting and record-keeping requirements.

120.11(1) *Reporting.* The following information shall be submitted to the department on a form provided by the department. All reporting submissions shall include the name, address, and telephone number of the landfarm and permit holder, as well as the permit number.

a. Storage notification. Multiuse and single-use landfarms shall submit the following information to the department and department field office with jurisdiction over the landfarm before receipt of the PCS for storage; however, at least 30 days' notification is encouraged. PCS storage information from an emergency cleanup supervised by the department pursuant to subrule 120.6(1), however, shall be reported within 7 days of the emergency cleanup.

(1) The date the PCS is expected to be delivered for storage at the landfarm.

(2) Where the PCS will be stored at the landfarm.

(3) The spill number, UST registration number, and LUST number, as applicable.

b. Land application notification. Multiuse and single-use landfarms shall submit the following information to the department and department field office with jurisdiction over the landfarm before land application; however, at least 30 days' notification is encouraged. PCS information from an emergency cleanup supervised by the department pursuant to subrule 120.6(1), however, shall be reported within 7 days of the emergency cleanup.

(1) The date the PCS is expected to be land applied.

(2) Single-use landfarms shall submit an address, topographic map, soil map with key, and a map of the 100-year flood plain illustrating and labeling where the PCS is to be applied. Multiuse landfarms shall report the landfarm plot(s) to which the PCS is to be applied.

(3) Application rate calculations pursuant to subrule 120.9(6).

(4) The spill number, UST registration number, and LUST number, as applicable.

c. PCS analysis and characterization. Information on the analysis and characterization of the PCS pursuant to rule 567—120.6(455B) shall be submitted to the department before receipt of the PCS for storage or land application; however, at least 30 days' notification is encouraged. PCS analysis and characterization information from an emergency cleanup supervised by the department pursuant to subrule 120.6(1), however, shall be reported within 60 days of the emergency cleanup.

d. Groundwater monitoring well results. Multiuse landfarms shall annually test all groundwater monitoring wells as follows. A laboratory certified pursuant to 567—Chapter 83 for UST petroleum analyses shall test the samples. Test results for each well at a multiuse landfarm shall be submitted to the department by the first workday in January of each year.

(1) BTEX testing. The groundwater monitoring wells shall be tested for benzene, toluene, ethylbenzene, and xylene (BTEX). The BTEX analysis shall utilize the most recent version of Method OA-1 (GCMS), "Method for Determination of Volatile Petroleum Hydrocarbons (Gasoline)," University of Iowa Hygienic Laboratory.

(2) TEH-diesel and waste oil testing. The groundwater monitoring wells shall be tested for total extractable hydrocarbons (TEH-diesel and waste oil). The TEH-diesel and waste oil analyses shall utilize the most recent version of Method OA-2, "Extractable Petroleum Products (and Relatively Low Volatility Organic Compounds)," University of Iowa Hygienic Laboratory.

(3) MTBE testing. The groundwater monitoring wells shall be tested for MTBE unless prior analysis of PCS accepted for landfarming, pursuant to rule 567—135.15(455B), has shown that MTBE was not present in soil or groundwater of the source. A laboratory certified pursuant to 567—Chapter 83 for UST petroleum analyses shall test the samples. The analysis shall utilize one of the following methods:

1. The most recent version of Method OA-1 (GCMS), "Method for Determination of Volatile Petroleum Hydrocarbons (Gasoline)," University of Iowa Hygienic Laboratory.

2. U.S. Environmental Protection Agency (EPA) Method 8260B, SW-846, "Test Methods for Evaluating Solid Waste," Third Edition.

120.11(2) *Record keeping.* All landfarms shall maintain records of all information related to compliance with this chapter and the permit throughout the life of the landfarm and for three years after landfarm closure pursuant to rule 567—120.12(455B). This information shall be available to the department upon request. Applicable information includes, but is not limited to, the following material.

a. Permit application information pursuant to rule 567—120.5(455B).

b. PCS analysis and characterization pursuant to rule 567—120.6(455B).

c. Site suitability information pursuant to rule 567—120.7(455B).

d. Specific design requirements pursuant to rule 567—120.8(455B).

e. Operations information pursuant to rule 567—120.9(455B); in particular, application rate calculations pursuant to 120.9(6).

f. ERRAP documents pursuant to rule 567—120.10(455B).

g. Reports submitted pursuant to subrule 120.11(1).

h. Closure information pursuant to rule 567—120.12(455B).

567—120.12(455B) Landfarm closure. Unless otherwise required or approved by the department, landfarms shall be closed as follows.

120.12(1) *Multiuse landfarms.* Multiuse landfarms may be closed after groundwater monitoring well tests verify that down-gradient groundwater monitoring well results are within two standard deviations of the mean analyte concentrations, pursuant to paragraph 120.11(1)*"d,"* in corresponding up-gradient monitoring wells for three consecutive years after the last application of PCS. Furthermore, prior to closure each landfarm plot shall be tested as follows. Closure is not official until verified in writing by the department.

a. One sample from each 10,000 ft^2 (e.g., 100-foot $\times$ 100-foot area) of landfarm plot is analyzed pursuant to subparagraphs 120.6(2)*"c"*(1), (2), and (3). A minimum of one sample per landfarm plot shall be obtained. All samples shall be obtained from between the top 2 to 6 inches of soil.

b. The results of the tests in paragraph 120.12(1)*"a"* demonstrate that petroleum constituent concentrations are less than 0.54 mg/kg for benzene, 42 mg/kg for toluene, 15 mg/kg for ethylbenzene, 3800 mg/kg for TEH-diesel and 0.02 mg/kg for MTBE.

120.12(2) *Single-use landfarms.* Single-use landfarms are closed three years after the application of PCS, or at least six months after the application of PCS when documentation has been submitted and acknowledged in writing by the department that each landfarm plot has been tested as follows.

a. One sample from each 10,000 ft^2 (e.g., 100-foot $\times$ 100-foot area) of landfarm plot is analyzed pursuant to subparagraphs 120.6(2)*"c"*(1), (2), and (3). A minimum of one sample per landfarm plot shall be obtained. All samples shall be obtained from between the top 2 to 6 inches of soil.

b. The results of the tests in paragraph 120.12(2)*"a"* demonstrate that petroleum constituent concentrations are less than 0.54 mg/kg for benzene, 42 mg/kg for toluene, 15 mg/kg for ethylbenzene, 3800 mg/kg for TEH-diesel and 0.02 mg/kg for MTBE.

These rules are intended to implement Iowa Code sections 455B.301A, 455B.304 and 455B.383.

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